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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,183	12/22/2006	Peter Isberg	43315-230171	6909
26694	7590	11/13/2009		
VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998			EXAMINER AHMED, SHAMIM	
			ART UNIT	PAPER NUMBER
			1792	
			MAIL DATE	DELIVERY MODE
			11/13/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

### Application No.

10/576,183

### Applicant(s)

ISBERG ET AL.

### Examiner

Shamim Ahmed

### Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 57-61, 63 and 65-112 is/are pending in the application.
- 4a) Of the above claim(s) 94-112 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 57-61, 63 and 65-93 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____.                                     |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/12/09</u> .   | 6) <input type="checkbox"/> Other: _____.                         |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. This application contains claims 94-112 drawn to an invention nonelected with traverse in the reply filed on 10/22/08. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

It is also pointed out that the non-elected claims 94-112 was not properly identified in the previous response filed on dated 6/30/09. Applicants are requested to properly identify the non-elected claims as "Withdrawn currently-amended" as the election/restriction requirement was made Final on the previous office action.

### ***Terminal Disclaimer***

2. The terminal disclaimer filed on 6/30/09 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent 6,838,627 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 57-93 as to the point that the prior art (Tuller et al) does not teach the nanocomposite comprises at least one of M-X and MAX nanocrystals have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 57-61 and 63, 65-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuller et al (2002/0068488) in view of Lu et al (6,747,291).

As to claims 57,60-61, Tuller et al disclose an electrical contact for silicon carbide devices in which the contact layer of conductive ternary compound (14) including titanium silicon carbide ( $\text{Ti}_3\text{SiC}_2$ ) material reads on the claimed multi element material with the general formula of  $\text{M}_{n+1}\text{AX}_n$  (paragraph 0007).

Tuller et al also disclose the titanium silicon carbide material further includes materials at least one of Zr, Hf, Al, Ge, Nb, Ta, ---- Mo, Sn, P, As, S, and N (see paragraph

0008-0009) and aforementioned reads on the claimed limitation of "said multi element material.

Tuller et al remain silent regarding the multi-element material comprises at least one nanocomposite having at least one nanocrystals.

However, Lu et al teach an ohmic contacts for metal/carbon on SiC with the formation of nano-graphite flakes plays an important role in the determination of the contact (col.5, lines 35-40) and aforesaid teaching resemble as the claimed limitation of nanocomposite.

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to employ Lu et al's teaching into Tuller et al's configuration for achieving an improved electrical contact as taught by Lu et al.

As to claims 58-59 and 63, Tuller et al teach that the  $Ti_3SiC_2$  material can include other elements discusses above and for a solid solution with the  $Ti_3SiC_2$  with the same or close related crystalline structure (paragraph 0022), wherein the contact material considered to be in an amorphous state as claimed.

Tuller et al may not explicitly teach the contact film (14) comprises mixed regions of amorphous regions and nanocrystalline.

However, Tuller et al's contact film 14 having the similar constituents as the claimed ones and it would have been expected to have the similar characteristics as claimed.

As to claims 69-74 and 81, Tuller et al teach the electrical contact 14 is elastically rigid and thin with an excellent thermal conductor (paragraph 0021) and the claimed

thickness ranges would have obvious to optimize the same by one of ordinary skilled in the art at the time of claimed invention because the a particular thickness of the contact layer depends on the type of device to be electrically connected.

As to claim 87, Tuller et al illustrate that the electrical contact may comprises doped by one of several compounds or elements (paragraph 0027).

As to claims 85-86, 89-93, Tuller et al teach the contact film can be deposited by several techniques such as sputtering, pulsed laser or chemical vapor deposition (paragraph 0020) and furthermore, the process step is not given patentable weight as the claimed invention is directed to a product.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (571) 272-1457. The examiner can normally be reached on Mon-Thurs day (7:00-3:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Shamim Ahmed  
Primary Examiner  
Art Unit 1792

SA  
November 9, 2009

/Shamim Ahmed/  
Primary Examiner, Art Unit 1792